

ABSTRACT

Ultra-high-strength linepipes having excellent low-
temperature toughness manufactured by welding together
5 the edges of steel plates comprising C of 0.03 to 0.07
mass%, Si of not more than 0.6 mass%, Mn of 1.5 to 2.5
mass%, P of not more than 0.015 mass%, S of not more than
0.003 mass%, Ni of 0.1 to 1.5 mass%, Mo of 0.15 to 0.60
mass%, Nb of 0.01 to 0.10 mass%, Ti of 0.005 to 0.030
10 mass%, Al of not more than 0.06 mass%, one or more of
required amounts of B, N, V, Cu, Cr, Ca, REM (rare-earth
metals) and Mg, with the remainder consisting of iron and
unavoidable impurities and having a $(Hv-ave)/(Hv-M)$ ratio
between 0.8 and 0.9 at $2.5 \leq P \leq 4.0$, wherein Hv-ave is
15 the average Vickers hardness in the direction of the
thickness of the base metal and Hv-M is the martensite
hardness depending on C-content ($Hv-M = 270 + 1300C$) and
a tensile strength TS-C between 900 MPa and 1100 MPa; $P =$
 $2.7C + 0.4Si + Mn + 0.8Cr + 0.45(Ni + Cu) + (1 + \beta)Mo - 1$
20 $+ \beta$ ($\beta = 1$ when $B \geq 3$ ppm and $\beta = 0$ when $B < 3$ ppm).